



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/556,909

11/15/2005

David Ruffieux

09894.0006-00

1811

22852

7590

03/17/2008

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP

901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER

JOHNSON, RYAN

ART UNIT

PAPER NUMBER

2817

MAIL DATE

DELIVERY MODE

03/17/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/556,909	Applicant(s) RUFFIEUX, DAVID	
	Examiner Ryan J. Johnson	Art Unit 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 13-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 13-32 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/7/06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 13-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 13 recites, "means for determining a frequency drift due to the temperature of said signal output by said first oscillator by comparing the signal output with said first temperature-stable time reference". It is unclear if the scope of the claim intends the first oscillator signal output or the second oscillator output signal in the emphasized instance. The examiner recommends changing "the signal output" to "the signal output by said first oscillator" in order to clarify the scope of the claim. Claims 14-31 are rejected merely for inheriting the deficiency present in claim 13.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 13,20,23,26,30 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beaudin et al. (U.S. Patent No. 6,831,525, hereinafter Beaudin) in view of Weinberg et al. (U.S. Patent No. 5,783,973, hereinafter Weinberg) and Ichimaru (U.S. Patent No. 6,734,738).

6. Regarding claims 13 and 32, Beaudin discloses a layout (Fig.4), delivering an output signal capable of forming a time reference, comprising: a first oscillator (10,40), including a resonator of frequency $F1$, generating an output signal and having a first order thermal coefficient ($\alpha1$; col.4,60); an oscillator circuit (12,42) including a second oscillator (12) outputting a signal and including a resonator of frequency $F2$ different from that of the resonator of the first oscillator (col.5,54-57); the resonator of the second oscillator presenting a first order thermal coefficient $\alpha2$ in a ratio $F1/F2$ with the first order thermal coefficient $\alpha1$ (col.5,19-24), a proportional factor λ (divider 42 value), and the oscillator circuit also including a frequency divider (42) dividing the frequency $F2$ of the signal output of the second oscillator by λ and generating an output signal of the oscillator circuit (the dividers disclosed by Beaudin are used to apply proportionality factors to the output signals in order for the frequencies to meet the required thermal coefficient-to-frequency ratio; col.7,46-51); and means for generating (14), by frequency difference between the signal output by the first oscillator (10,42) and the signal output by the oscillator circuit (12,42), a first temperature-stable time reference (OUTPUT; col.5,24-32).

7. Beaudin discloses that the design can be used on various forms of resonators (col.1,10-25), but does not explicitly disclose the use of silicon resonators for the first

and second oscillators. Silicon resonators are one of the many well known resonators in the art. Weinberg discloses an oscillator utilizing a silicon resonator (Fig.3, col.2,50-55) and that such a silicon resonator has an accuracy superior to quartz resonators (col.2,50-53). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a silicon resonator-based oscillator, as disclosed by Weinberg, as the first and second oscillators in the circuit of Beaudin in order to have provided the benefits of improved accuracy.

8. Beaudin also does not explicitly disclose means for determining a frequency drift by the first oscillator by comparing the signal output with the stable time reference or the claimed programmable correction means. Ichimaru discloses a lower power timer circuit having a low power, low stability oscillator (11) and a highly stable, high power oscillator (21). When in configuration mode, the counter (22) counts the number of pulses of the high stability oscillator (21) in each period of the low stability oscillator (11; col.3,13-20). After comparing the low-stability oscillator with the high stability oscillator, a frequency divider (12) is used in order to correct the frequency drift of low stability oscillator (col.3,21-32). One of ordinary skill in the art at the time of the invention would have been led by the teachings of Ichimaru to have implemented the correction circuit disclosed by Ichimaru, including the drift determination circuits (22,24,25) and correction circuits (12) with the first oscillator (10) of Beaudin used as the low stability reference and the output of the mixer (14) of Beaudin as the high stability reference in order to have provided the benefits of reduced power consumption, as disclosed by Ichimaru (col.1,37-40). Therefore, it would have been obvious to one of ordinary skill in the art at

the time the invention was made have used the correction circuitry of Ichimaru with the oscillator circuitry of Beaudin in order to have provided reduced power consumption.

9. Regarding claim 14, Ichimaru discloses a means for determining frequency drift (24,25) and controlling the programmable correction means according to the number of pulses counted by the counter (22). Ichimaru, however, discloses counting the number of highly stable oscillator pulses per period of the low-stability oscillator, contrary to the claimed limitations. However, the examiner notes that counting the highly stable pulses during a set period of low stability pulses or vice versa is a mere matter of design choice, as either method arrives at the ratio required to calculate frequency drift (col.3,13-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have counted the number of pulses of the highly stable oscillator rather than the number of pulses of the low stability oscillator as an obvious design choice alternative to the calculation of the required frequency ratio.

10. Regarding claims 15 and 16, Ichimaru discloses selecting a standby mode for a predetermined interval (col.4,21-31).

11. Regarding claims 20 and 21, Ichimaru discloses means for storing the calibration information (memory 25; col.3,21-23).

12. Regarding claim 23, Ichimaru discloses that the correction means includes a programmable divider (12) which compensates frequency drifts of the first oscillator due to the temperature (col.1,32-61).

13. Regarding claims 26 and 30, Neither Beaudin, Ichimaru, or Weinberg disclose the circuit being applied in a time base or time piece. However, timepieces are well

known in the art, and the highly stable frequency output of Beaudin, Ichimaru, and Weinberg would be suitable in a timepiece. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the circuit of Beaudin, Ichimaru, and Weinberg as a suitable frequency source for a well known time base or timepiece.

Allowable Subject Matter

14. Claims 17-19,22,24,25,27-29 and 31 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter: Prior art does not disclose generating temperature information from the number of pulses generator by the first oscillator within the scope of the claims.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Zumsteg (U.S. Patent No. 4,344,046) discloses powering down a high frequency oscillator in a temperature compensated dual oscillator structure, but lacks the claimed frequency drift determination means and the claimed frequency to thermal coefficient ratios.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan J. Johnson whose telephone number is (571)270-

1264. The examiner can normally be reached on Monday - Thursday, 9:00 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Pascal can be reached on 571-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RJJ/

/Robert Pascal/
Supervisory Patent Examiner, Art Unit 2817